

CLAIMS

What is claimed is:

1. A flexible circuit having vias disposed to minimize discontinuity in a ground plane separating opposing transmission lines, said flex circuit comprising:
 - 5 a first type of electrical connection pads disposed on a first surface of said flexible circuit, and electrically coupled to a first transmission line;
 - 10 a second type of electrical connection pads disposed on a second surface of said flexible circuit, and electrically coupled to a second transmission line wherein said second type of electrical connection pads have a higher areal density than said first type of electrical connection pads; and
 - 15 vias disposed proximate said first type of electrical connection pads and extending through a ground plane to provide for electrically coupling said first transmission line and said second transmission line, such that said vias minimize discontinuity in said ground plane.
2. The flexible circuit as described in Claim 1 wherein said first type of electrical connection pads are flip-chip pads.
- 20 3. The flexible circuit as described in Claim 1 wherein said first type of electrical connection pads are wirebond bond pads.
4. The flexible circuit as described in Claim 3 wherein at least one of said plurality of vias is coincident with one of said plurality of wirebond bond pads.
- 25 5. The flexible circuit as described in Claim 2 wherein at least one of said plurality of vias is coincident with one of said plurality of flip-chip pads.
6. The flexible circuit as described in Claim 4 wherein at least one of said plurality of wirebond bond pads is substantially tear-dropped shaped.
- 30 7. The flexible circuit as described in Claim 5 wherein at least one of said plurality of flip-chip pads is substantially tear-dropped shaped.

8. The flexible circuit as described in Claim 1 wherein said first type of electrical connection pads are configured for coupling an integrated circuit thereto.

9. The flexible circuit as described in Claim 1 wherein said first type of electrical connection pads are configured for coupling an optical module thereto.

10. The flexible circuit as described in Claim 1 wherein said second type of electrical connection pads are a ball grid array or pin grid array.

10 11. An electrical connection assembly having vias disposed to combine electrical discontinuity, said electrical connection assembly comprising:

a flexible circuit comprising a ground plane separating a first surface and a second opposing surface, said first surface having a first transmission line coupled thereto and said second surface having a second transmission line coupled thereto;

15 a via proximate to a first region of electrical connection pads configured to receive a wirebond, said via electrically coupling said first transmission line and said second transmission line wherein said wirebond generates electrical discontinuity and said via generates electrical discontinuity and wherein said via is proximate said first region of electrical connection pads for combining said electrical discontinuity caused by said wirebond and said electrical discontinuity caused by said via.

20 12. The electrical connection assembly as described in Claim 11 wherein said first region of electrical connection pads comprises at least one via capture pad.

25 13. The electrical connection assembly as described in Claim 12 wherein said via capture pad is substantially teardrop shaped.

14. The electrical connection assembly as described in Claim 11 further comprising a second region of electrical connection pads comprising a ball grid array 30 or pin grid array.

15. The electrical connection assembly as described in Claim 11 wherein said first region of electrical connection pads are configured for coupling an optical module thereto.

16. The electrical connection assembly as described in Claim 14 wherein said first region of electrical connection pads has an areal density less than said second region of electrical connection pads.

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17. The electrical connection assembly as described in Claim 16 wherein said first region of electrical connection pads are a linear array of pads.

18. A circuit assembly having vias disposed proximate a plurality of bond pads to 10 minimize electrical discontinuity in said circuit assembly, said circuit assembly comprising:

a flexible circuit comprising a first surface and a second opposing surface separated by a ground plane, said first surface having a first conductive layer coupled thereto and said second surface having a second conductive layer coupled thereto;

15 said plurality of bond pads coupled to said first conductive layer and configured to receive a wirebond electrical connection;

electrical connection pads coupled to said second conductive layer configured to electrically couple an external electrical assembly to said second conductive layer; and

20 vias proximate said plurality of bond pads, said vias enabling electrical coupling of said first conductive layer and said second conductive layer, said vias disposed to minimize discontinuity in said circuit assembly.

19. The circuit assembly as described in Claim 18 wherein said plurality of bond 25 pads are via capture pads.

20. The circuit assembly as described in Claim 18 wherein said plurality of bond pads are configured for coupling an optoelectronic device thereto.

30 21. The circuit assembly as described in Claim 18 wherein at least one of said vias shares one of said plurality of bond pads.

22. The circuit assembly as described in Claim 21 wherein at least one of said plurality of bond pads is substantially tear dropped shaped.

23. The circuit assembly as described in Claim 18 wherein said plurality of bond pads are disposed with an areal density less than said connection pads.